

SJW

WHAT IS CLAIMED IS:

- SJW*
- comprising:
1. A machining device for machining a surface of a workpiece
 - a) a tool including a rotational axis and porous material with an outer peripheral surface disposed about the rotational axis and adapted to machine a surface of a workpiece; and
 - b) a fluid delivery device oriented relative to the tool to disperse fluid to contact the tool primarily at a location inboard from the outer peripheral surface of the tool such that dispersed fluid is capable of flowing through the porous material, wherein the machining device provides a controlled radial discharge of fluid at a workpiece surface in use.
 2. The machining device of claim 1, wherein the fluid delivery device further comprises a deflection member to assist in directing fluid to the contact location.
 3. The machining device of claim 1, wherein the tool defines a cavity with an interior surface and wherein the contact location is on the interior surface.
 4. The machining device of claim 1, wherein the fluid delivery device includes an attachment member adapted for fluid connection to a spindle of a machining center.

5. The machining device of claim 1, wherein the fluid delivery device is oriented relative to the tool to disperse fluid primarily in a dispersion direction from the rotational axis to the outer peripheral surface of the tool.
6. The machining device of claim 1, wherein fluid delivery device is oriented relative to the tool to disperse fluid primarily in a dispersion direction that is substantially parallel to the rotational axis.
7. The machining device of claim 1, wherein the fluid delivery device comprises a first outlet and a second outlet.
8. The machining device of claim 7, wherein the tool comprises a first side and a second side, wherein the first outlet is oriented relative to the tool to disperse fluid to primarily contact the first side and wherein the second outlet is oriented relative to the tool to disperse fluid to primarily contact the second side.
9. The machining device of claim 1, wherein the fluid delivery device includes an outlet that is located inboard from the outer peripheral surface of the tool.
10. The machining device of claim 9, wherein the outlet is located in a cavity defined in the tool.
11. The machining device of claim 1, wherein a portion of the tool adjacent the peripheral surface is adapted to inhibit fluid flow to assist in providing a controlled radial discharge of the fluid at a workpiece surface in use.

12. The machining device of claim 1, wherein the tool comprises a hub and a working member at least partially defining the outer peripheral surface.
13. The machining device of claim 12, wherein the hub includes a support member and an outer member defining a hub peripheral surface, wherein the working member is adjacent the hub peripheral surface.
14. The machining device of claim 13, wherein the outer member is at least partially impermeable to fluid and comprises a plurality of apertures adapted to permit fluid to pass through the outer member.
15. The machining device of claim 13, wherein the support member and the outer member define a cavity, wherein the contact location is on an interior surface of the cavity.
16. The machining device of claim 15, wherein the fluid delivery device includes an outlet located in the cavity.
17. The machining device of claim 12, wherein the working member is attached to the hub peripheral surface.
18. The machining device of claim 17, wherein the working member is attached to the hub peripheral surface with an adhesive layer.

19. The machining device of claim 18, wherein the adhesive layer is not a continuous layer.

20. The machining device of claim 1, wherein the fluid delivery device is adapted to compensate for changes in material characteristics of the tool in order to assist in maintaining proper dispersal of fluid at a machining zone.

21. The machining device of claim 1, wherein the contact location is predetermined to assist in providing a controlled radial discharge of fluid at a workpiece surface in use.

22. A method of machining a workpiece comprising the steps of:

a) providing a workpiece;

b) providing a tool including a rotational axis and porous material with an outer peripheral surface disposed about the rotational axis;

5 c) providing a fluid delivery device;

d) dispersing fluid from the fluid delivery device such that the fluid contacts the tool primarily at a contact location inboard from the outer peripheral surface of the tool;

10 e) rotating the tool about the rotational axis such that fluid flows through the porous material; and

f) machining the workpiece with the outer peripheral surface of the tool at a machining zone, wherein a controlled radial discharge of fluid is provided at the machining zone.

23. The method of claim 22, wherein the fluid delivery device comprises a fluid lubrication device.

24. The method of claim 22, wherein the contact location is in an area advance of the machining zone.

25. The method of claim 22, wherein at least a portion of the fluid travels through a portion of the tool.

26. The method of claim 25, wherein the rotation of the tool facilitates in movement of the fluid through the tool.

27. The method of claim 22, further comprising the step of modifying parameters of the fluid delivery device to compensate for changes in material characteristics of the tool in order to assist in maintaining proper dispersal of fluid at the machining zone.

Saddam